<u>WHAT IS CLAIMED IS:</u>

1. A method for managing radio frequency (RF) transmissions from an RF system of at least one mobile platform operating within a predetermined coverage region to a space-based transponder orbiting within said coverage region, in a manner to maintain a signal-to-noise ratio (Eb/No) of said RF transmissions within a

5   predetermined range, the method comprising the steps of:

using a first control loop to monitor, by a central controller, a signal-to-noise ratio of said RF transmissions received by said satellite transponder, and to transmit commands to said mobile platform via said satellite transponder for maintaining said signal-to-noise ratio within a predetermined range; and

10 using a second control loop including a mobile system of said mobile platform to monitor and periodically adjust a power level of said RF transmissions to said satellite transponder to thereby maintain said power level of said RF transmissions at a previously commanded level.

2. The method of claim 1, wherein said predetermined signal-to-noise range comprises a range of about 1dB.

3. The method of claim 1, wherein said predetermined signal-to-noise range is above a threshold signal-to-noise ratio of said central controller.

4. The method of claim 1, further comprising the step of using said central controller to determine if said RF transmission from said mobile platform remains outside of said predetermined signal-to-noise ratio for more than about one second and, if so, commanding the mobile platform to cease said RF transmissions.

5. The method of claim 1, wherein the step of monitoring by a central controller comprises monitoring by a ground-based central controller located within said coverage region.

6. A method for managing radio frequency (RF) transmissions from an RF system of at least one mobile platform operating within a predetermined coverage region to a space-based transponder orbiting within said coverage region, in a manner to maintain a signal-to-noise ratio (Eb/No) of said RF transmissions within a predetermined range, the method comprising the steps of:

using a first control loop to monitor and adjust a power level of said RF transmissions to maintain same within said predetermined range, said first control loop including the steps of:

receiving said RF transmissions at a central controller;

using said central controller to determine a signal-to-noise ratio of said RF transmissions received by said satellite transponder;

comparing said determined signal-to-noise ratio with predetermined signal-to-noise values representing said predetermined range; and

transmitting commands representing changes in said signal-to-noise ratio from said central controller to said space-based transponder, and from said space-based transponder to said mobile platform, to thereby command said mobile platform to adjust a power level of its said RF transmissions, in real time, to maintain said signal-to-noise ratio of said RF transmissions within said predetermined range.

7.   The method of claim 6, further comprising using a second control loop between said mobile platform and said satellite transponder to monitor and maintain said signal-to-noise ratio at a previously commanded level, said second control loop including the steps of:

monitoring said signal-to-noise ratio of said RF transmissions between said mobile platform and said satellite transponder; and

periodically adjusting said power level of said RF transmissions to maintain said power level at said previously commanded level determined by said central controller.

8.   A method of determining a power spectral density (PSD) of an RF signal from a mobile platform having an RF transmitter/receiver directed at a space-based transponder, said method comprising the steps of:

using a central controller to receive and determine a signal-to-noise ratio of said RF signal transponded from said space-based transponder;

assuming that said signal-to-noise ratio of said RF signal received by said central controller is approximately identical to a signal-to-noise ratio of a RF signal at an output of said space-based transponder;

determining an effective isotropic radiated power (EIRP) value of an RF signal directed at said space-based transponder by said mobile platform as a function of said signal-to-noise ratio of said RF signal received by said central controller, and denoting said EIRP value as a target EIRP;

using said target EIRP and a pattern of an antenna of said mobile platform to determine an actual EIRP reaching a GEO arc within which said space-based transponder resides; and

using said actual EIRP reaching said GEO arc to determine said PSD of said RF signal being transmitted by said mobile platform.